



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,072	09/02/2003	Akihisa Yamamoto	242203US2	1493
22850	7590	05/21/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			NGUYEN, MINH T	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

20X

Office Action Summary	Application No. 10/652,072	Applicant(s) YAMAMOTO, AKIHISA	
	Examiner Minh Nguyen	Art Unit 2816	

-- The MAILING DATE of this communication appears in the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 4-5 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,325,258, issued to Choi et al.

As per claim 1, Choi discloses a driving circuit (Fig. 1, lower half) for driving a semiconductor device (LOW POWER FET 100) which is driven based on a signal supplied to a

Art Unit: 2816

gate terminal (OUT) and includes a main electrode (D) for providing an output (to the load 50) and a sense electrode (CS), said driving circuit comprising:

an overcurrent protection circuit (resistor RCS and comparator 22) for detecting an overcurrent condition of said semiconductor device based on a sense voltage (CS) obtained from said sense electrode, and outputting an overcurrent protection signal (at the output of the comparator 22) which instructs said semiconductor device to stop operating when an overcurrent condition is detected (by controlling switch 14); and

an overcurrent protection signal masking part (blanking circuit 25, switch 14 and buffer 16) for establishing a masking period including at least a predetermined period (for example, 500ns, column 5, lines 2) immediately after a turn on and a turn off of said semiconductor device (column 4, lines 58-68, i.e., caused by the spikes from the normal switching of the output transistor 100), and invalidating said overcurrent protection signal in said masking period while validating said overcurrent protection signal in other periods than said masking period to supply said overcurrent protection signal to said gate terminal of said semiconductor device (this is the purpose of a blanking circuit).

As per claim 4, since switch 14 which is part of the overcurrent protection signal masking part receives the drive related signal from the pre-driver 12, the recited limitation is met.

As per claim 5, see the abstract, last line.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2816

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being obvious over US Patent No. 5,325,258, issued to Choi et al. in view of US Patent No. 5,710,508, issued to Watanabe.

As per claim 2, Choi discloses a driving circuit as discussed in claim 1 but he does not explicitly disclose a short circuit protection circuit as called for in the claim.

Watanabe discloses a driving circuit (Fig. 1) which includes an overcurrent protection circuit (20) and a short circuit protection circuit (transistor 3T, diode 3D, resistors R1 and R2) for detecting the short circuit condition of a load to protect the semiconductor device 1 based on the sense voltage V1 from the sense electrode of the semiconductor device 1. He further explicitly teaches the advantage of the addition of the short circuit protection circuit is for preventing the semiconductor device 1 from breaking down when the load is shorted (column 6, lines 16-28).

It would have been obvious to a person skilled in the art at the time of the invention was made to add the short circuit protection circuit taught by Watanabe to the Choi driving circuit for the advantage explicitly taught by Watanabe which is to prevent the breakdown of the semiconductor device as discussed herein above.

As per claim 3, Fig. 3 of the ~~Choi~~ ^{Watanabe} reference clearly shows the condition recited in the claim, i.e., the amplitude of short-circuit current is much higher than overcurrent, therefore, the threshold voltage for detecting short condition must be higher than the threshold voltage for detecting the overcurrent condition.

Art Unit: 2816

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Nguyen whose telephone number is 571-272-1748. The examiner can normally be reached on Monday, Tuesday, Thursday, Friday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



5/14/04

Minh Nguyen
Primary Examiner
Art Unit 2816